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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/763,857	05/31/2001	Ralf Trutschel	10191/1750	3474

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EXAMINER

KIM, CHRISTOPHER S

ART UNIT	PAPER NUMBER
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3752

DATE MAILED: 06/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/763,857

Applicant(s)

TRUTSCHEL ET AL.

Examiner

Christopher S. Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6,7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The preliminary amendment filed on May 31, 2001 has been entered in part. Amendment to the specification has not been entered because it fails to comply with 37 CFR 1.121(b)(1)(ii) and 37 CFR 1.121(b)(1)(iii). New claims 11-21 have been renumbered 12-22 per 37 CFR 1.75 because the application, as originally filed, contained claims 1-11.
2. This Office action utilizes line numbers, which includes numbering of blank lines, provided by the applicant when referring to lines in the specification section of the application by line number.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "direct injection of a fuel into a combustion chamber of the internal combustion engine" recited in claim 12 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 11-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

Claim 11 is dependent on a canceled claim. The claim has not been considered under prior art.

Claim 12 recites the limitation "on a downstream end" in line 8. It is uncertain what element the "downstream end" is in reference to.

Claim 12 recites the limitation "the outlet orifice" in line 17. There is insufficient antecedent basis for this limitation in the claim.

Claim 19 recites the limitation "a spray element" in line 2. This appears to be a double inclusion of the "valve seat element" recited in claim 11, line 6.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 11-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Imafuku et al. (4,890,794) in view of Shen et al. (5,878,962).

With respect to claims 11, 12 and 14-21, Imafuku et al. discloses a fuel injector comprising: an energizable actuating element 14; a valve needle 27; a fixed valve seat 48; a valve seat element 9, 55; an orifice 54a,b; a valve closing section 47; a flattened face (downstream end of 45). Imafuku et al. does not disclose a swirl-producing element. Shen et al. discloses a swirl-producing element 38, 48 upstream of a fixed valve seat 34. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have incorporated the swirl-producing element of Shen et al. to the device of Imafuku et al. to provide a swirl pattern spray.

With respect to claim 13, Imafuku et al. in view of Shen et al. discloses the limitations of the claimed invention with the exception of the ratio. It would have been obvious to one having ordinary skill in the art at the time the invention was made to d/D of approximately 1.5 for optimization dependent of operating criteria, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

8. Claims 11-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ren et al. (5,996,912).

Ren et al. differs from what is being claimed in the flattened face diameter d being greater than the outlet orifice diameter. Ren et al. discloses an outlet orifice diameter d_0 which is greater than the flattened face diameter d_f . This embodiment is

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precisely the embodiment applicant discloses in figure 6 and on page 9, lines 8-13 of the current application. Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to have optimized the values of d_0 and d_f for desirability dependent on certain applications (applicant's specification, page 9, line 12.

Conclusion


9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tamaki et al. discloses a flat end needle in a fuel injection valve.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher S. Kim whose telephone number is (703) 308-8336. The examiner can normally be reached on Monday - Thursday, 6:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry C. Yuen can be reached on (703) 308-1946. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7766 for regular communications and (703) 308-7766 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.

CK
June 1, 2002

CHRISTOPHER KIM
PATENT EXAMINER

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